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SMARA UPDATE

The Quarterly Newsletter of the Department of Conservation - Office of Mine Reclamation

OMR Completes Report On SMARA Compliance

Special language in the 2000-01 state budget required the Department of Conservation to report in October 2000 to the legislature on the following:

♦ The identity and location of all mines subject to the requirements of the Surface Mining and Reclamation Act (SMARA) that, as of July 2000, were illegally operating without either valid financial assurances or valid reclamation plans, or lacking an annual lead agency inspection.

♦ Enforcement actions initiated by the DOC against those mines.

♦ The DOC's work plan for bringing all remaining illegal mining operations into compliance with SMARA or for closure of such mining operations.

The DOC is also required, beginning January 1, 2001, to report quarterly on all enforcement and mine closure actions initiated during the previous three months, and to identify any other mining operations that have been discovered to be out of compliance with SMARA.

In developing the report, OMR took a multi-phased approach designed to maximize the accuracy of the information reported. First, a series of database queries identified mines with potential compliance problems and determined the priority of file reviews. Second, OMR reviewed the mine files targeted by the query, focusing on the fundamental SMARA compliance issues identified in the legislature's request to the DOC. Third, to minimize erroneously reporting a mine as out of compliance, OMR contacted all lead agencies to inform them of the legislatively mandated report and to seek their assistance. The outreach to lead agencies yielded the required documentation for some mines that otherwise would

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Surety Companies Removed from Circular 570

In the last several months, a number of surety companies have been removed from the U.S. Treasury Department's list of registered surety providers. Known as Circular 570, federal agencies may only accept bonds, including bonds with dual obligees where one of the obligees is a federal agency, that are written by surety companies listed on the circular. Surety companies are removed from the treasury list for a number of reasons, but their removal is usually due to financial instability and increased risk of default. Federal agencies holding bonds issued by sureties that have been removed from Circular 570 are required to immediately secure new bonds or, for bonds that are continuous in nature, not renew them.

SMARA lead agencies holding surety bonds that name either the Forest Service or the Bureau of Land Management as an additional obligee should review those bonds to ensure the issuing surety is not included in the list below. If the surety is listed, the lead agency should contact the federal agency as soon as possible to determine the status of the bond. The

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OMR Completes Report On SMARA Compliance

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have been listed as out of compliance. Future changes in compliance status that the DOC can confirm will be reflected in the quarterly reports.

Because of limited resources, the report does not reflect whether the reclamation plan, financial assurances and lead agency inspection meet the requirements of SMARA.

The final report does, however, identify those mines subject to SMARA that lack a reclamation plan, financial assurance, or lead agency inspection. The numbers reported are:

- 61 active mines that lack a lead agency approved reclamation plan and/or financial assurance;
- 76 inactive mines that lack a lead agency approved reclamation plan and/or financial assurance; and,
- 224 mines lacking a lead agency annual inspection.

Overall, for the 1,474 currently reporting mines, the DOC determined that:

- 95% have submitted a lead agency approved reclamation plan;
- 91% have submitted a lead agency approved financial assurance; and,
- 85% have had a lead agency inspection since 12/31/98.

Based on the nature of non-compliance, the DOC has established three priority categories for action in its enforcement work plan:

1) Mining operations that are actively mining and lack a lead agency approved reclamation plan and/or financial assurance;
2) Mining operations that have not received a lead agency inspection since January 1, 1999; and,
3) Mining operations that are not actively mining and lack a lead agency approved reclamation plan and/or financial assurance.

The report was a yeoman effort on the part of many people. While limited in its scope due to resources, the DOC believes it is a good indicator of compliance with SMARA's requirements for having approved reclamation plans, financial assurances, and inspections. It also provides an excellent blueprint for our enforcement efforts for the coming year.

Glenn Stober,
Assistant Director

It is estimated that there may be more than 30,000 abandoned and inactive mine locations in the state. If you know of or find an abandoned mine, please call and report it to the Abandoned Mine Lands Unit. The toll free number for reporting an abandoned mine is:

1-877-OLD MINE

Remember to stay out and stay alive!

Surety Companies Removed from Circular 570

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California Department of Insurance's list of admitted sureties should also be reviewed to ensure the company is still in conformance with California's requirements. The list may be viewed by visiting the department's web site, which can be found at www.insurance.ca.gov/docs/FS-Admitted.

Sureties Removed from Treasury Department's Circular 570

- Reliance Insurance Company
- Reliance Insurance Company of Illinois
- Reliance National Indemnity Company
- Reliance Surety Company
- United Pacific Insurance Company
- Connecticut Indemnity Company
- Empire Fire and Marine Insurance Company
- Security Insurance Company of Hartford

Andrew Rush,
Environmental Specialist

Best Management Practices for Reclaiming Surface Mines

Editor's Note: This article is excerpted from Best Management Practices for Reclaiming Surface Mines in Washington and Oregon, Open File Report 96-2 published by Washington State Department of Natural Resources and Oregon State Department of Geology and Mineral Industries.

Storm Water and Erosion Control

Protecting water quality and preventing erosion are two important tasks mine operators must address. Federal legislation and increasing concern and scrutiny by state and local agencies and the public require that mine operators pay close attention to even small or temporary discharges of storm water. The quality of those discharges, particularly their turbidity, is a direct reflection of how sediment on the site is handled. Expensive solutions to water quality problems can often be avoided by incorporating storm water and erosion control techniques into the mine development plan. For most mine sites, a good storm water control system can minimize or even eliminate storm water discharge during the operation phase. When mining ceases, erosion control is still necessary but should rely on techniques that can function without maintenance.

Specific techniques appropriate to a given site depend on climate, topography, and the erodibility of the material present. The following general guidelines are applicable everywhere:

♦ Carefully plan the areas to be cleared in order to minimize disturbance.
♦ Retain sediment by using erosion control BMPs.
♦ Interrupt the flow of surface water to reduce velocity.
♦ Use revegetation and mulching to stabilize cleared areas as soon as practical.
♦ Isolate fines produced during mining and processing.
♦ Develop a plan for maintaining storm water and erosion control structures. Follow the plan, and modify it as necessary to address changing conditions.

Although water quality is ultimately the operator's responsibility, maintenance of storm water and erosion control systems must be a priority for management and involve all mine employees. Managers should explain to staff why controlling storm water and erosion is so important. An effective program requires that everyone be on the lookout for seemingly insignificant situations that can snowball into major problems if not addressed in time.

We encourage operators and their employees to experiment with improving their storm water systems. Common sense and innovation, with an emphasis on early recognition and response to erosion and sediment transport problems, are the key to effective storm water control.

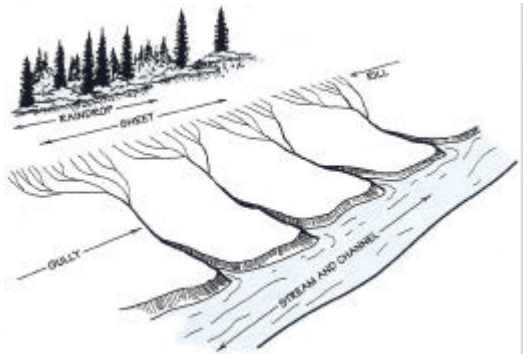
Erosion

The rate of erosion is affected by four main factors:

♦ *climate*, which determines how much rain and snow will fall on a site,
♦ *soil characteristics*, which determine erodibility and infiltration rates,
♦ *topography or slope*, which determines the velocity of runoff and the energy water will have to cause erosion, and
♦ *vegetation*, which slows runoff and prevents erosion by holding soils in place.

Each of these factors plays a role in determining which BMP should be used to control erosion on a given site.

Erosion begins when raindrops displace soil particles. Raindrops may combine into sheets of water and flow over the surface (overland flow) to cause sheet erosion. Topography then concentrates water to produce rill and gully erosion. When water from rills and gullies combines, larger erosive streams and channels form.



A single raindrop may move a splashed particle two feet vertically and five feet horizontally. The velocity of a raindrop is more than ten times higher than typical surface runoff velocities, which means that soil particles are more likely to be dislodged by raindrop impact than

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Message from the Director

Darryl Young

"Statistics are like lampposts: they are good to lean on, but they don't shed much light."

Robert Storm-Petersen, 1882-1946, Danish Artist

Statistically speaking, 95 percent of California's mines are in compliance with the state's Surface Mining and Reclamation Act. This figure comes to us courtesy of a report completed recently by the Department of Conservation, as required by the Legislature.

Just how much light this particular statistic sheds on the true status of compliance is open to interpretation. After all, our numbers are only as good as the data local lead agencies provide to us.

By most measures, 95 percent would be considered a good number. A great number, in fact. However, my instincts – not to mention staff from the DOC's Office of Mine Reclamation – tell me that perhaps the number does not tell the whole story.

What the report shows is compliance as self-reported by mine operators and local lead agencies, not all of which do the annual mine inspections required under SMARA. So, yes, technically we have 95 percent compliance, but to what standards?

The report tells us whether a reclamation plan is in place, but doesn't tell us if a mine's reclamation plan is substandard, or if it has been upgraded as required when operators make amendments to the scope of their mining activities.

The report tells us whether financial assurances are in place, but doesn't tell us if financial assurances for specific mines are, in fact, sufficient to cover the cost of reclamation. In any event, financial assurances are supposed to be modified annually. However, whether they are or not is a matter of question.

The report tells us what has been done, but doesn't necessarily tell us what has been done right.

These issues point out why annual mine inspections are vital to the process. Annual inspections, required by SMARA, allow local lead agencies to understand fully the scope of a mine's work and whether or not the reclamation plan and financial assurance are adequate. Lead agencies that fail to perform annual inspections are, potentially, undermining their ability to understand the nature of mining operations for which they are responsible.

If lead agencies or operators find inaccuracies in the report, please let us know and we'll make changes. If you're a mine operator in compliance, but not listed as such, we need to be aware of that. If you're a mine operator in need of assistance updating your reclamation plan or financial assurance, we can help facilitate that process.

I'm happy the report indicates there is, in general, solid compliance with SMARA. To the extent the data we receive from lead agencies is good, the report is good. But I can't help but feel there is more to the picture than meets the eye.

What's Going On

Editor's Note: This column lists educational conferences and workshops related to mining and mine reclamation that will be occurring in the near future. The list is not meant to be comprehensive.

International Erosion Control Association
32nd Annual Conference and Expo
February 5 – 9, 2001
Rio Suite Hotel & Convention Center, Las Vegas, NV
Cost: Varies w/membership
Information: (970) 879-3010 or www.ieca.org

Best Management Practices for Reclaiming Surface Mines

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by surface runoff. Once the particles are mobilized, however, much less energy is required to keep them suspended or moving.

Turbidity and Suspended Sediment

Erosion results in stream water that has high turbidity and a large sediment load. Turbid, sediment-laden water can adversely affect frogs and toads, clams, bottom dwelling insects, and the appearance of stream systems. High levels of turbidity can also interfere with the feeding habits of fish, especially juveniles, and clog gills. Settleable solids can cover spawning gravels and suffocate eggs.

Turbidity is a measure of the amount of light that can pass through water in a straight line. Turbidity is reported as Nephelometric Turbidity Units (NTU). A high NTU value means that little light is transmitted through the water because it is absorbed or deflected by particles in the water.

Suspended sediment is composed of settleable and nonsettleable solids. Settleable solids (sand- and silt-size particles) are heavier than water and will settle in calm water. Nonsettleable solids (clay-sized particles) take a long time (or distance) to settle out of suspension – in some cases, years – and are the chief cause of turbidity.

Executive Officer's Report

Results of Court Case: City of Irwindale vs. SMGB -- On October 3, 2000 the California Appeals Court, Second District, upheld a decision of the Los Angeles Superior Court that recognized the State Mining and Geology Board's authority to accept an appeal by United Rock Products Corporation (URP) to review and approve its reclamation plan for its Pits 2 and 3 in the City of Irwindale. URP had appealed to the board, the failure of the City of Irwindale to act in a timely manner to process a revised reclamation plan. The city sued the board in Superior Court, claiming that the board did not have jurisdiction in this matter. When the Superior Court ruled in favor of the board, the city appealed the decision.

At its October 12, 2000 regularly scheduled business meeting held in Sacramento, the State Mining and Geology Board took the following actions on these SMARA issues:

1) Approved a financial assurance cost estimate for Sha Neva's Plant #2 in the Town of Truckee for the amount of $224,152. This new estimate was prepared by a licensed engineer at the request of the operator when the board expressed its belief that the earlier financial assurance amount of $51,000 was not adequate to perform reclamation according to the approved reclamation plan. The board is the lead agency for this mine.

2) Adopted Resolution 2000-09 approving the reclamation plan and mitigation monitoring program for Atkinson Brick's Los Angeles Plant, located in the City of Compton. The board was acting as the lead agency for the operator who appealed its reclamation plan review to the board because the city did not have a surface mining ordinance that was in accordance with current SMARA.

3) Adopted Resolution 2000-10 approving the reclamation plan for the Department of Transportation's (Caltrans) Coso Material Site # 177 in Inyo County. Caltrans had appealed the reclamation plan review to the board because the county refused to review the reclamation plan unless processing fees were paid. Caltrans is forbidden by statute from paying those processing fees.

4) The board heard an appeal from a Sacramento County surface mine operator who received an Administrative Penalty from the Department of Conservation for alleged violations of SMARA: **Hearing:** Hardesty Sand and Gravel, Schneider Historic Mine vs. Director of Department of Conservation (Case No. 91-34-0042-00A). The director had issued an Administrative Penalty in the amount of $10,000 for the alleged failure to provide proof of a lead agency approved reclamation plan and financial assurance as required by Public Resources Code Section 2207. In light of the evidence presented, which consisted of an administrative record submitted by the department, written correspondence and oral testimony from the operator's attorney, oral presentation from the operator, and presentations from representatives from Sacramento County and the department, the board found that

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Executive Officer's Report

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the violations of SMARA contained in the director's Notice and Order to be substantially true and correct. The board upheld the penalty in the full amount.

At its November 9, 2000 regularly scheduled business meeting held in San Diego, the board took the following actions on these SMARA issues:

1) Approved a request by Strahm Engineering, Inc. for exemption from the requirements of SMARA under PRC § 2714(f) for its proposed operations at the Gegunde Stock Pond in Fresno County. The particulars of the request had been earlier reviewed by the board's Mining Reclamation Standards Committee, which recommended the exemption be granted. The board found that the operation was a short-lived, one-time activity that would cause minor surface disturbance.

2) Adopted Resolution 2000-11 approving the reclamation plan and mitigation monitoring program for Beyer Pit in the City of San Diego. The board became the lead agency for the review and approval of the reclamation plan and environmental documents when it accepted an appeal from the operator of Beyer Pit. The City of San Diego's surface mining ordinance was not in accordance with current SMARA, and was unable to process the reclamation plan review. The city's ordinance has since been re-certified by the board.

3) The board accepted the annual surface mine inspection reports for ten mines in El Dorado County as

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Yellow Starthistle and It's Control

In 1850, yellow starthistle (*Centaurea solstitialis*) was introduced to California from Eurasia. Favored by disturbance such as newly cultivated restoration sites, road building and overgrazing, yellow starthistle covers between 10 and 15 million acres in California. This competitive species prevents the establishment of other species by forming dense clusters that deplete soil moisture. With each plant producing between 20,000 and 30,000 seed annually, what are some of the methods to control this plant? This reclamation tip will explain some of the methods to keep this invasive plant under control.

Flower Head and Seed Head

Biology

It is helpful to understand the biology of this plant to devise a management plan. Yellow starthistle is a long-lived winter annual that is found below 6,000 feet elevation where average annual rainfall is between 10 and 60 inches. The seeds germinate between fall and spring, corresponding with California's rainy season. The newly germinated plants allocate most of their energy to root growth and by late spring the root system can extend over 3 feet into the soil profile! This deep-rooted plant has the competitive advantage over shallow rooted plants during the summer months when moisture is very limited near the soil surface. Favored by full sun, yellow starthistle can survive well into the late summer and can re-grow after its top has been removed by mowing or grazing.

Control

There are five general categories of yellow starthistle control. The control of yellow starthistle requires the combination of treatments over several years. It is necessary to control the seed production by eradicating current growth and concurrent establishment of competitive, usually perennial vegetation.

Prevention

Prevention is the first line of defense. You can prevent the spread of yellow starthistle by using certified seed that is weed free. Hay, used as mulch and feed can also be a source of yellow starthistle seed. It is important to use only certified weed-free hay whenever possible.

Biological Control

There are several insect enemies of yellow starthistle that have been imported from Europe. These biological control agents include two weevils and three flies. The insects reduce yellow starthistle by attacking

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being performed in accordance with the board's wishes. The board assumed authority to conduct surface mine inspections under SMARA from El Dorado County last March 9, when the board found that past inspections did not accurately portray the true status of the mining operations. These inspection reports will be forwarded to the mine operators, and to the county for its action. 4) The board adopted Resolution 2000-12 certifying the City of Tracy's revised surface mining and reclamation ordinance.

John Parrish, Ph.D.
Executive Officer

Yellow Starthistle and It's Control

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the flower, which produces the seed. These insects are host-specific and do not attack other plants. It may take several years for these insects to become established, so another method of control may be necessary in the interim. The hairy weevil and the peacock fly have been very successful in reducing yellow starthistle in El Dorado county. You can obtain more information regarding where to get biological control agents from the County Department of Agriculture.

Cultural Control

Cultural control includes mowing, grazing, hand pulling and burning. Well-timed mowing when the first flower opens is recommended to reduce the seed bank. Intensive grazing by sheep, goats and cattle in late May and June is also recommended. It is important to avoid overgrazing, however. Where it is feasible, hand pulling the plants and destroying any seed heads is a very effective way to decrease yellow starthistle. Burning is another method to reduce the plants and is best performed at the end of the rainy season when the flowers first form.

Mature Starthistle

Chemical Control

Both preemergent and postemergent herbicides can be used to control yellow starthistle. There are several choices available for non-crop areas as well as rangeland. A county agricultural advisor should be consulted to determine the best chemical for the site. The newly registered herbicide Transline© (Clopyralid) is effective on yellow starthistle both preemergence and postemergence. This herbicide is fairly selective on yellow starthistle.

Revegetation

The previously mentioned control methods will reduce yellow starthistle populations, however, without competition, yellow starthistle will reestablish. Once yellow starthistle populations are reduced, perennial bunchgrasses, wildflowers and legumes can be planted. Unfortunately yellow starthistle seeds can remain viable for more than 3 years, so they will reestablish as desirable species emerge. One option is to plant grasses and use a selective herbicide to eliminate broad-leafed plants such as yellow starthistle.

In summary, a combination of some or all of the previously described methods over time will control this invasive weed. A herbicide can be used to reduce yellow starthistle; while fast growing competitive species and slow growing perennial bunch grasses are encouraged. It may be necessary to utilize well-timed mowing, hand-pulling, burning or grazing to reduce seed producing flowers the second year when the herbicide has worn off. Releasing biological control agents after herbicide application can have long-term benefits in reducing yellow starthistle from your site and adjacent areas.

Karen Wiese,
Plant Ecologist

Financial Assurance Tips

Editor's Note: The following information was excerpted from Fundamentals of Earthmoving published by Caterpillar Tractor Company and is reprinted here courtesy of Caterpillar Inc. A basic understanding of these fundamentals is helpful when reviewing financial assurance cost estimates.

Material on the move has three properties that the earthmover is vitally concerned with on the job. These properties are weight, swell, and compactability…mark them well!

Weight

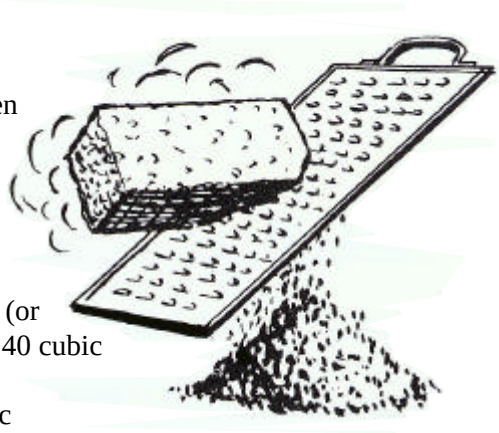
"How heavy is material?" "How much does it weigh?" The weight of material is something every contractor is interested in knowing. He cannot estimate the adequacy of his equipment to do the job unless he knows the weight of each cubic yard of material he must transport.

For example, we know that the volume capacity of the Cat 463 Scraper is 28 cubic yards heaped. We also know the recommended weight limitation is 63,000 pounds for a load. If the load is cinders, a relatively light material, the volume capacity of the scraper will be reached before the unit is anywhere near its weight limitation. However, if the material is wet gravel, a very heavy material, the weight capacity will be exceeded before the volume capacity of the scraper is reached.

In addition to the problem of load limits, weight of material also affects the way in which a scraper will load, a bulldozer will push, or a motor grader will cast material. As long as material is on the move, its weight affects the performance of the equipment moving it.

The ability of earthmoving equipment to turn, maneuver, and haul in high speed ranges is directly influenced by material weight. Generally speaking, the heavier the material, the more effort will be needed to move it. However, as long as the weight and volume capacities are not exceeded, satisfactory performance can be assured.

Swell and Load Factor



Swell may be defined as the volume increase of a material when it is removed from the natural state. It is expressed as a percentage of the increase in volume. For instance, the swell of dry clay is 40% which means that one cubic yard of clay in the bank (or natural state) will fill a space of 1.40 cubic yards in the loosened state.

Another material characteristic that is important in earthmoving is the load factor which is the percentage decrease in the density (pounds per cubic yard) of a material from its natural state to a loose state. The load factor is important since earthmoving contracts are normally based on materials measured in bank yards. A contractor can determine bank yards of a particular material if loose yards are known simply by multiplying the loose yards by the load factor (loose yards x load factor = bank yards). The load factor and swell may be determined as follows:

$$\text{Load Factor} = \frac{\text{pounds per cubic yard (loose)}}{\text{pounds per cubic yard (bank)}}$$

$$\%\ \text{Swell} = \left(\frac{1}{\text{Load Factor}} - 1\right) \times 100$$

The table on the adjoining page is a partial list of the approximate density (pounds per cubic yard), swell, and load factor of the most common types of materials. To illustrate swell and load factor, let's assume a contractor is using an 18 cubic yard (heaped) scraper to load and transport dry clay. From the [material characteristic] table, the characteristics of dry clay are as follows: density is 2945 pounds per cubic yard (bank), swell is 40%, and load factor is .72.

The 18 cubic yard load of loose clay will represent approximately (18 x .72) or 13 bank cubic yards. Or, if he already knows that he has to

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Financial Assurance Tips

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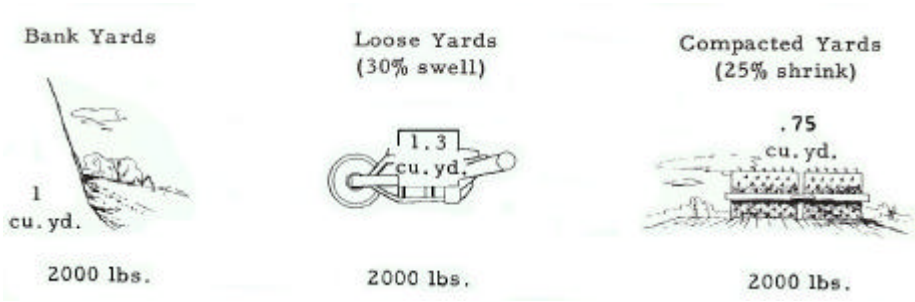
move 13 bank cubic yards, then he can determine that the material will swell by 5 cubic yards (.40 x 13) and he will have to move (5 + 13) 18 loose cubic yards.

Compactability

When the backyard gardener fills a hole in the yard with earth, why does he always step on the fill or pat it with a shovel? Because from experience he knows that filled earth that isn't compacted or compressed will "sink" or distort. On earthmoving jobs, compaction is required for the same reason. Loose earth can be compressed into a smaller space by various mechanical methods such as rolling, tamping, pulverizing, and adding water.

In earthmoving work, it is common to compact material tighter than it occurred in a natural state. Shrinkage of compacted yards is expressed with respect to bank yards and not loose yards. Another term which is frequently encountered in earthmoving is pay yards. Pay yards can be bank yards, loose yards, or compacted yards, whichever one is specified as the basis for payment on the job. In most cases, bank yards are the quantity on which the contractor receives payment, but this is not always the case. In levee or dike work, compacted yards are customarily pay yards.

Typical Earthmoving Cycle



Approximate Material Characteristics*

Material	Lbs. per Cu. Yd.	% of Swell	Load Factor	Lbs. per Cu. Yard - Loose
Clay, Natural Bed	2900	40	.72	2100
Clay & Gravel, Dry	3000	40	.72	2200
Wet	3700	40	.72	2700
Earth, Loam, Dry	2600	25	.80	2100
Wet	3400	25	.80	2700
Gravel, ¼" - 2" Dry	3100	12	.89	2800
Wet	3400	12	.89	3000
Gypsum, Solid	5100	74	.57	2900
Iron Ore, 60% Iron	5860	33	.75	4400
50% Iron	5340	33	.75	4000
40% Iron	4800	33	.75	3600
Limestone	4500	67	.60	2700
Sand, Dry, Loose	3000	12	.89	2700
Wet, Packed	3600	12	.89	3200
Sandstone (Shot)	4100	54	.65	2700
Slag (Blast Furnace)	2700	23	.81	2200
Trap Rock	5200	65	.61	3200

*The weight and load factor will vary with such factors as grain size, moisture content, degree of compaction, etc. A test must be made to determine an exact material characteristic.

Happy New Year!

The *SMARA Update* is a quarterly publication of the Department of Conservation's Office of Mine Reclamation, 801 K Street, MS 09-06, Sacramento, California 95814, (916) 323-9198. Our web site address is http://www.consrv.ca.gov/omr. The purpose of this publication is that of imparting the latest in reclamation tips, as well as changes in legislation or interpretation of existing statutes by court decisions.

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